# *pragma's* product profiles

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## Automating the shipping counter

Does your company make a lot of United Parcel or Postal Service shipments? Or use any shipper that publishes big charts for calculating shipping charges? How *are* your shipping clerks computing shipping charges? Are they doing manual table lookups every time they need to know the cost of a shipment?

A surprising number of companies either calculate their shipping charges by hand, or let the shipper compute the charges for them. One technique is slow. Both techniques are unreliable. Without much effort, your computer can be doing the work for you.

Let's use UPS shipping as an example. A ground shipment's cost depends on first knowing the "zone" a package is going to. Destination zones are numbered from 2 to 8, with zone 2 being nearby, and zone 8 further away. To determine the correct destination zone, you look up the destination ZIP code on a UPS "zone chart". Different zone charts are available for the various ZIP codes from which the package might be originating. For example, our ZIP code is 95003,

so we use UPS zone chart 7232, which declares that shipments to nearby ZIP codes like 936XX through 954XX are going to zone 2, while shipments to distant ZIP codes like 400XX through 418XX are going to zone 8.

Once we know the ground shipment's destination zone number and the package's weight, we can look up the cost of the shipment on the UPS cost chart. The cost chart is a large 7 x 70 matrix showing the shipment cost for all possible weights from 1 to 70 pounds and all the seven possible destination zones 2 through 8. The cost table for air shipments also has 70 rows for 1 to 70 pounds, but only 3 zone columns (48 states, Hawaii, Puerto Rico), while the express air table has just 2 columns (49 states, Puerto Rico).

A program to automatically calculate shipping charges should only have to ask for the destination ZIP code and the type of shipment (ground, air, or express), then look up the cost by using the necessary tables.

The zone chart can be represented by a single item consisting of a multivalued list of three-digit ZIP code prefixes, and a multivalued list of corresponding zone numbers. Although UPS charts show the beginning and ending ZIP ranges for a zone, our program will only need the

ZIP that ends a zone. For example,

```
ZONE.CHART
001 374]375]379]381]385]387...
002 8]7]8]7]8]7...
```

is the beginning of the actual zone chart item for our region, showing that destination ZIPs 374XX and below are zone 8, 375XX is zone 7, 376XX through 379XX are zone 8, and so on. It only takes a minute or two to type in the chart, which contains 82 values in each attribute. If you're creating a lot of zone charts for different originating ZIP codes, or if you prefer better input validation, you can create the ZONE.CHART item with a program like

```
MAKE.ZONE.CHART
001 OPEN "MD" ELSE STOP "No MD!"
002 ZONE.CHART = ""
003 LOOP
004 CRT "3-digit prefix":; INPUT ZIP
005 UNTIL ZIP = "" DO
006  IF ZIP MATCHES "3N" THEN
007   LOCATE ZIP IN ZONE.CHART<1>
       BY "AR" SETTING POS THEN
       CRT "Already have it!" ELSE
008   CRT "Zone number": ; INPUT ZONE
```

```
009    ZONE = INT(ZONE)
010    IF (ZONE>=2) AND (ZONE<=8) THEN
011     INS ZIP BEFORE ZONE.CHART<1,POS>
012     INS ZONE BEFORE
          ZONE.CHART<2,POS>
013     END ELSE CRT "Bad zone!"
014    END
015    END ELSE CRT "Bad prefix!"
016 REPEAT
017 WRITE ZONE.CHART ON "ZONE.CHART"
018 STOP
019 END
```

The UPS 7 x 70 cost chart is a bit more of a problem. Having to enter almost 500 miscellaneous cost amounts to create that table is a very unappealing job. Fortunately, a little inspection reveals that there is more or less a pattern to the table's contents. For example, when shipping to zone 2, the cost for packages above 2 pounds in weight goes up by 8¢ for each pound, except every 4 pounds, when there's a 9¢ increase. After 50 pounds, there's a 2¢ increase resale per pound. (Except at 59 pounds, which has a 3¢ increase!) That means we can use a program like

```
    MAKE.COST.CHART
001 OPEN "MD" ELSE STOP "No MD!"
002 COST.CHART = "" ; ZONE = 2
003 FOR WEIGHT = 1 TO 70
004 PREV.COST=COST.CHART<ZONE,WEIGHT-1>
005 BEGIN CASE
006 CASE WEIGHT = 1
007   COST.CHART<ZONE,WEIGHT> = 116
008 CASE WEIGHT = 59
009   COST.CHART<ZONE,WEIGHT> = 539
010 CASE WEIGHT > 50
011   COST.CHART<ZONE,WEIGHT> =
        PREV.COST+2
012 CASE MOD(WEIGHT,4) = 1
013   COST.CHART<ZONE,WEIGHT> =
        PREV.COST+9
014 CASE 1
015   COST.CHART<ZONE,WEIGHT> =
        PREV.COST+8
016 END CASE
017 NEXT WEIGHT
018 COST.CHART<ZONE,1> = 123
019 WRITE COST.CHART ON "COST.CHART"
020 STOP
021 END
```

to automatically generate an item containing all 70 costs for UPS ground zone 2. To find the cost for a given weight from 1 to 70 pounds, just pick the corresponding multivalue from 1 to 70 in the attribute equal to the zone number (2).

Similar effort at analyzing the UPS charts can be made to discover the relationships that generate the remaining costs for zones 3 through 8 in the table, plus the tables for air rates and express air rates. That will be left as an exercise for the reader. However, remember to spend your time wisely. Don't forget that a good typist (or at

least a good keypad operator) can probably enter all 840 values for the three tables in no more than about 20 minutes, with another 20 minutes or so needed for proofing. If you can't quickly come up with the code for automatically generating the tables, you might as well just type them in.

Once you have the COST.CHART item completed (say, with the charges for zones 2 through 8 saved in attributes 2 through 8), it's a relatively simple matter to create a program that computes UPS ground charges:

```
    UPS.CHARGES
001 OPEN "MD" ELSE STOP "No MD!"
002 READ ZONE.CHART FROM "ZONE.CHART" ELSE STOP "No zones!"
003 READ COST.CHART FROM "COST.CHART" ELSE STOP "No costs!"
004 LOOP
005  CRT "To what ZIP code": ; INPUT ZIP
006 UNTIL ZIP = "" DO
007  IF ZIP MATCHES "5N" THEN
008   ZIP = ZIP[1,3]
009   POS = 1
010   LOOP
011    ZONE.ZIP = ZONE.CHART<1,POS>
012   WHILE (ZONE.ZIP < ZIP) AND (ZONE.ZIP # "") DO
013     POS = POS+1
014   REPEAT
015   ZONE = ZONE.CHART<2,POS>
016   IF ZONE # "" THEN
017    CRT "Total pounds": ; INPUT LBS
018    LBS = INT(LBS)
019    IF (1<=LBS) AND (LBS<=70) THEN
020     COST = COST.CHART<ZONE,LBS>
021     CRT LBS:" lbs. to ":ZONE:" is ":
022     CRT OCONV(COST,"MD2$")
023    END ELSE CRT "Bad weight!"
024   END ELSE CRT "Can't find zone!"
025  END ELSE CRT "Bad ZIP code!"
026 REPEAT
027 STOP
028 END
```

For a more finished package, you can add capabilities to handle air and express air tables, C.O.D. charges, Alaska shipments, and so on.

## This month's mailbag
### Editing gains, printing pains

In June, you published an article and source code for a screen editor. It took me a few months to get interested in keying it in, but once I did, I proceeded to modify it to operate on my AT version of Pick. I spent several

# Questions Most Frequently Asked About STRIDE/Z

**1.  What is STRIDE/Z?**

STRIDE/Z is an integrated package of manufacturing software for General Automation Zebra computers using the Pick operating system.  STRIDE/Z is a product of Semaphore Corporation.

**2.  What software is included in the STRIDE/Z package?**

STRIDE/Z includes 18 modules to automate every aspect of a manufacturing company:  accounts payable, accounts receivable, cost accounting, customer service, engineering, fixed assets, general ledger, inspection, order entry, payroll, personnel, production control, programming, purchasing, receiving, shipping, shop floor, and stock room.  The production control module includes regenerative Materials Requirement Planning.

STRIDE/Z consists of approximately 200 programs, 350 procs, 80 formatted screens, 655K bytes of online user documentation, and 225K bytes of online programmer cross reference documentation.  The approximately 100 files in STRIDE/Z require 2.5 million bytes of disk space for installation.  STRIDE/Z uses no assembler code.

**3.  Why is STRIDE/Z better than other manufacturing packages?**

STRIDE/Z works.  It was developed from scratch over a two year period at an actual electronics manufacturer, as sales climbed from $10 million to over $20 million.

STRIDE/Z has a clean, modular, well-structured, and conceptually integrated design.  All design and implementation work was the effort of an individual programmer.  Unlike other large software products, STRIDE/Z is not a collection of ad hoc patches and multiple programming styles.

STRIDE/Z simultaneously and correctly updates multiple files as soon as transactions are entered, in order to provide a database that is always up to date, and to avoid unfriendly batch-style processing.
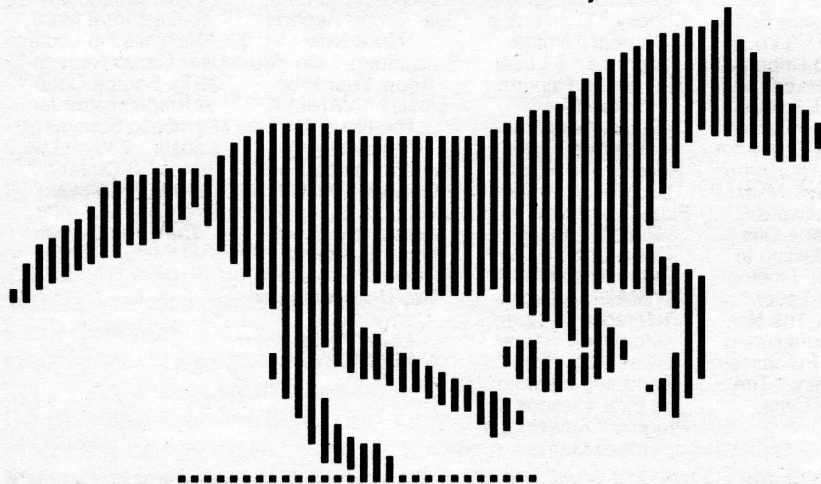
STRIDE/Z is well-documented, especially for the programmer.  Extensive cross-references carefully document all program, proc, and data interdependencies, so that modifications are easy and predictable.

And STRIDE/Z is inexpensive.

**4.  How can I find out more about STRIDE/Z?**

Call or write Semaphore Corporation, 207 Granada Dr., Aptos, CA 95003, (408) 688-9200.

more weeks (part time) to enhance the screen editor with most of the suggestions you had, and added features like those in my favorite word processor that runs on my TRS-80 Model 4. The finished product certainly enhances my ability to be more productive with Pick.

In your November issue, Wes Martin of La Jolla asked if there was any way to stop the form feed at the beginning of every printout. Your response to use the S option with STARTPTR will only work with serial printers. If Mr. Martin has a parallel printer like I do, then there is no current way to eliminate the initial form feed when data is printed by Access. I have had some conversations with Pick Systems about this irritation and will forward a copy of Mr. Martin's comment to them. It is a real pain to waste a single sheet of paper when printing small reports. It is for that same reason that all three of the parallel printers I own have push instead of pull tractors.

Wesley S. Kar
Phoenix, AZ

*Send us your enhanced editor, and we'll publish it. — Editors*

# Four programs for connecting your Macs to a Zebra.

**  File  Edit  Terminal**

FreeTerm 2.0

Logon please: SYSPROG

>WHERE
*000 0400 7F00      121.000 121.1B8
 001 0420 7000        6.18C   6.08C 392.094   5.18C
 002 0440 2F00      245.12A
 003 0450 5F00        3.21E 246.634 246.3CE
 005 0400 3F00      170.064 170.0C8
 006 04C0 3F00      170.064 170.170

>_
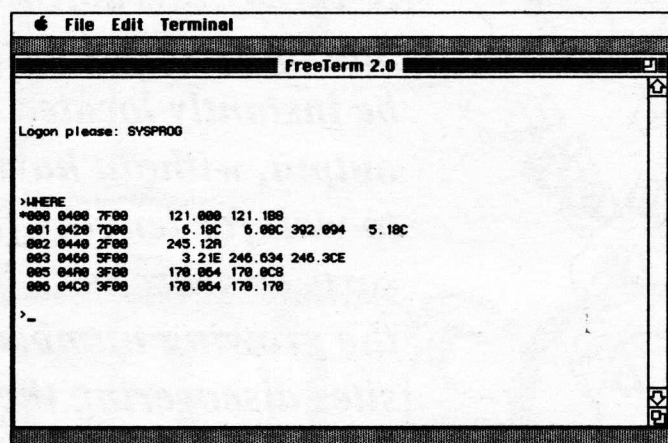
You can use FreeTerm: a simple text-only software emulator that turns your Mac into an ASCII terminal. There's no cursor control, but it does support X-on/X-off, and it's in the public domain.

**  File  Edit  Service  Local  Special**

00:01:47      9600-N-8-1-FULL      ○ °S  ○ °Q  ○ °C

Logon please: SYSPROG

>WHERE
*000 0400 7000      121.000 121.1B8
 001 0420 7000        6.18C   6.08C 392.094   5.18C
 002 0440 2F00      245.12A
 003 04__ __00        7.002 232.154
 005 04__ ____      170.064 170.0C8
 006 ____ ____      170.064 170.170

>_
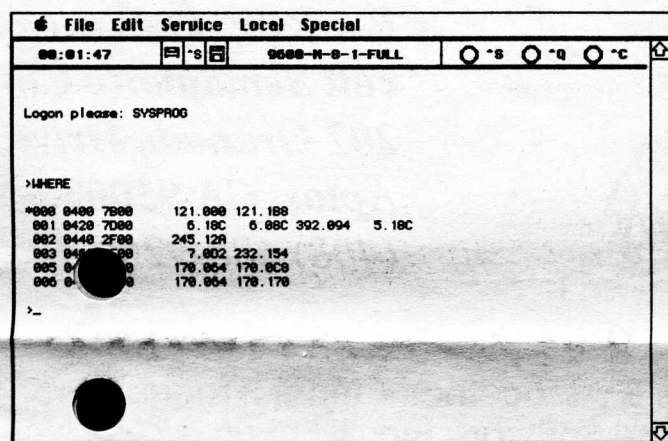
Or you can use Red Ryder: a former try-before-you-buy "shareware" product, this software is now a commercial offering. It supports lots of protocols, but still doesn't do much more than let your Mac input and display text.

**  File  Edit  Commands  Settings  Phone  Keypad**

Zebra

Logon please: SYSPROG

>WHERE
*000 0400 7000      121.000 121.1B8
 001 0420 7000        5.18C   6.08C 392.094   5.18C
 002 0440 2F00      245.12A
 003 0450 5F00        7.002 232.154
 005 0400 3F00      170.064 170.0C8
 006 04C0 3F00      170.064 170.170

>_
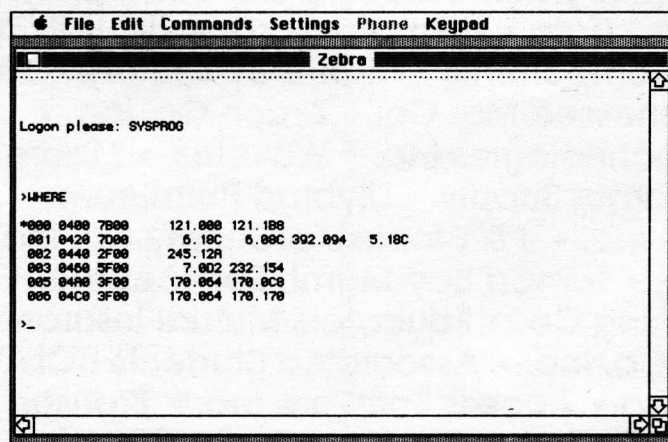
Or you can use MacTerminal: developed by Apple, this software turns your Mac into a complete (but slow) VT100 terminal. Still, it's only text-based, and all the power of your Mac goes wasted.

**  Menu**

Open  MacinTalk
Close "audible"
Delete
Send...
Receive
Change password...
Show balance...
Privileges...
Privacy...
Quit...

Telefolders

entertainment

demonstrations

audible

Wave Maker    Melody    MacinTalk

Bop    Sound    Sound Lab

font files & tools

Software to make your Macintosh
"MacinTalk" occupies 92983 bytes.
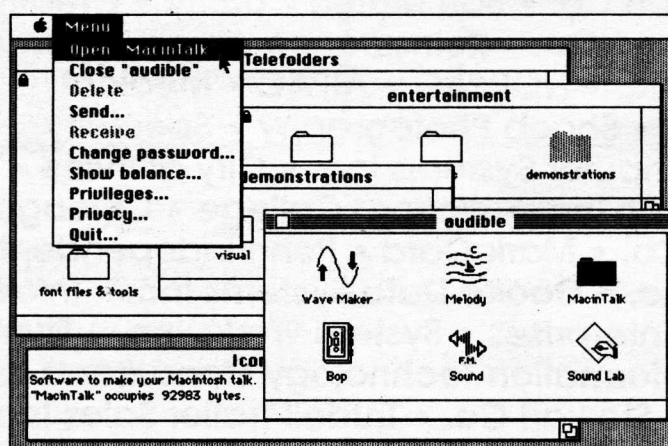
Or you can use Telefolders: sophisticated software that lets you tie your Zebra and Macs together, without losing the point-and-click power of the Macintosh interface. Mac files saved on the Zebra appear as standard icons, folders, and windows. To copy any Mac-style program, data, or document from the Zebra to your Macintosh, just click on the icon you want and select "Receive" from the Mac's pull-down menu. Each Mac also has access to its own private folder, for sending and receiving electronic mail via the Zebra.

Telefolders host software for the Zebra is $995. A starter kit of Telefolders software for the Macintosh is $49.95, and includes four free hours of access to Semaphore's own Zebra host, which features a large collection of Macintosh public domain software.

To order, or to receive more information, contact Semaphore Corporation, 207 Granada Drive, Aptos, CA 95003, (408) 688-9200.

# New B-TREE-P installations are sprouting up every day!
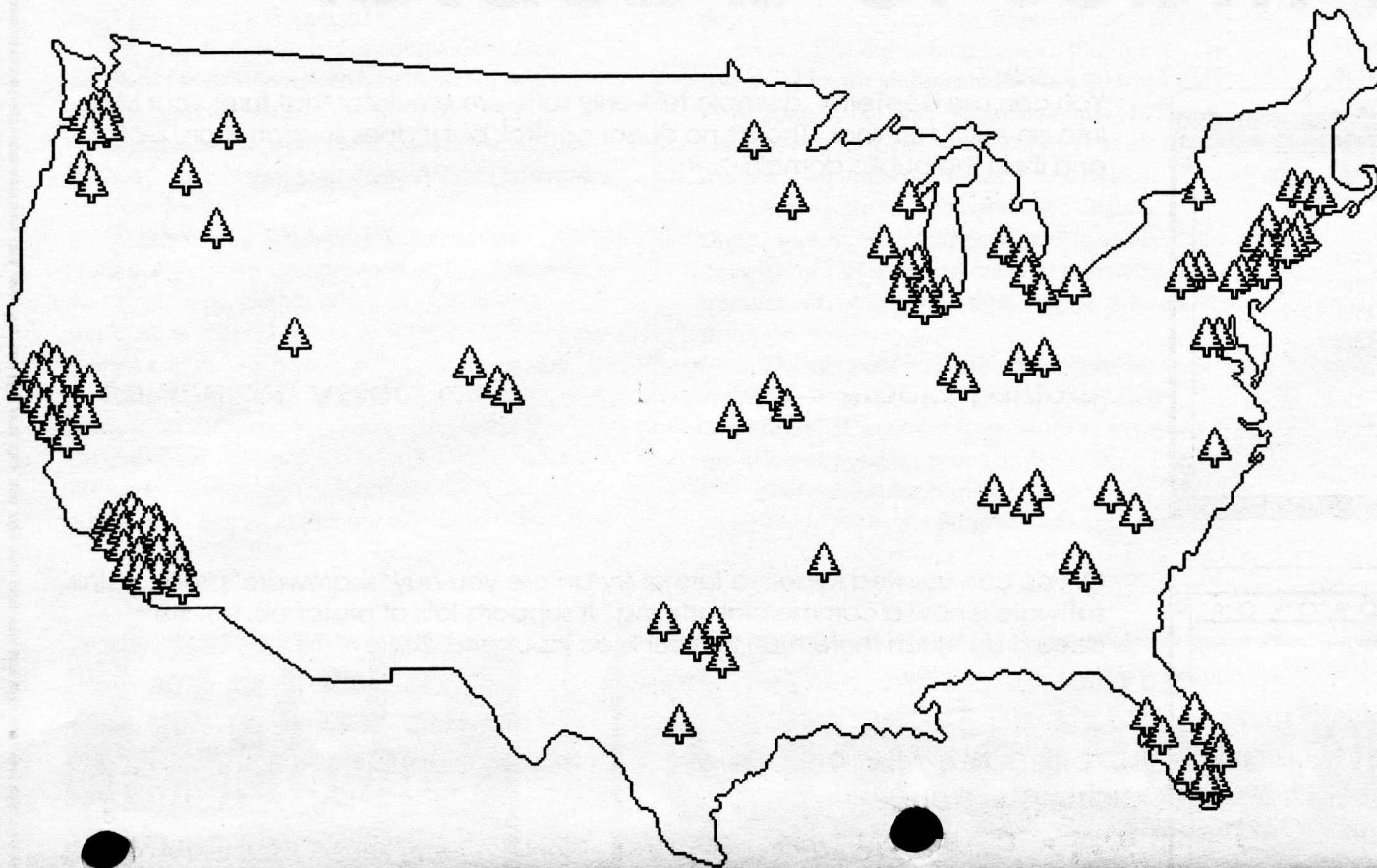
*B-TREE-P is software that allows your data to be instantly located and output, without having to wait for lengthy file sorts or searches. Join the growing number of sites discovering the power and flexibility of B-TREE-P. Write or call Semaphore Corp., 207 Granada Drive, Aptos, CA 95003, (408) 688-9200*

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